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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/614,592	07/12/2000	Toshifumi Sato	Q60082	2296

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EXAMINER	
FAN, CHIEH M	

ART UNIT	PAPER NUMBER
2634	8

DATE MAILED: 03/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/614,592	SATO, TOSHIFUMI	
	Examiner	Art Unit	
	Chieh M Fan	2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 7-10* is/are rejected.

7)☒ Claim(s) *2-6* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 July 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 7-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

According to Figs. 2 and 4, it appears that the specification only teaches means for averaging the weighted and added correlation signals (205 in Fig. 2 or 4). The drawings never show means for averaging the power of said correlated signals. It is not clear which element shown in Fig. 2 or 4 is referred to the claimed "means for averaging the power of said correlated signals".

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sawahashi et al. (U.S. Patent No. 6,069,912, "Sawahashi" hereinafter) in view of Ono (U.S. Patent No. 6,272,167).

Sawahashi discloses a path search circuit in a CDMA cellular system, comprising:

an antenna having a plurality of elements (901A-901C in Fig. 9);

a plurality of radio receivers for frequency-converting radio frequency signals received respectively by the elements of the antenna into respective baseband signals (902A in Fig. 9, note that the RF stage includes a plurality of RF elements, see 102A-102D in Fig. 1 or 502 in Fig. 5);

a plurality of A/D converters for converting the respective baseband signals into digital data (902A in Fig. 9, note that the RF stage includes a plurality of A/D converters, see 103A-103D in Fig. 1 or 503 in Fig. 5);

a plurality of correlation processors for calculating cross correlations between the digital data converted from the baseband signals and a signal known at a reception side, and outputting respective correlation signals (903A-903C in Fig. 9);

a weighted-mean-value processor for weighting and adding the correlation signals output from said correlation processors based on indicated weighting coefficients (904A-904C in Fig. 9);

a phase fluctuation estimator for outputting reception timing (phase) of a reception path (906 in Fig. 9); and

a weighting controller for controlling said weighting coefficients to determine a directivity of said antenna and generating a plurality of weighting coefficients to establish a plurality of general antenna directivities for dividing a sector where a mobile terminal with which to communicate is present, when a communication session starts (912 and 913 in Fig. 9).

The embodiment shown in Fig. 9 of Sawahashi does not specially teach (a) an averaging element to average the weighted and added correlation signals, and (b) the phase fluctuation estimator includes a correlation peak detector for detecting at least one peak from the weighted and averaged correlation signals output as delay profiles from said weighted-mean-value processor, and outputting a reception level and reception timing corresponding to the detected peak as a reception level and reception timing of a reception path.

With respect to item (a), Sawahashi also teaches that, in a multipath environment, the weighted and added correlation signals for each path are averaged (508 in Fig. 5) before the weighted and added correlation signals are combined in a rake combiner (511 in Fig. 5) in order to improve the signal quality and improve the detection accuracy. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to average the weighted and added correlation signals in the embodiment shown in Fig. 9 of Sawahashi in a multipath environment, so as to improve the signal quality and improve the detection accuracy.

With respect to item (b), it is well known a peak detector is required in the phase fluctuation estimator because the received phase is determined by the peak levels of the correlation between the received signal and a known signal, e.g. a pilot signal. Ono teaches that, in a CDMA system, a delay profile calculation unit calculates a delay profile from the reception signal (col. 3, lines 30-36). The delay profile is supplied to a path control unit. The path control unit detects a peak output phase from the delay profile at which N number of peak levels are obtained with a large correlation power. The peak output phase is converted to phases, i.e., timing, of a reception channel (col. 3, lines 44-50). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to recognize that a peak detector is required in the phase fluctuation estimator of Sawahashi to detect the peak levels of correlation, and thereby to determine the phase (timing) of the reception path.

5. Claims 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawahashi in view of Ono as applied to claim 1 above, and further in view of Dobbins et al. (U.S. Patent No. 5,730,272).

As applied to claim 1 above, Sawahashi in view of Ono teaches the claimed invention but fails to teach a moving average method (claim 7) or an exponentially weighted mean method (claim 9). However, both moving average and exponentially weighted mean methods are well known methods for calculating average in the art. Dobbins et al. teaches that the exponentially weighted moving average also has the advantage of ease of microprocessor implementation since the exponentially weighted

moving average can be easily calculated (col. 15, lines 38-40). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to calculate average using exponentially weighted moving average method, since the exponentially weighted moving average can be easily calculated and be easily implemented in a microprocessor.

Response to Arguments

6. Applicant's arguments filed 1/2/04 have been fully considered but they are not persuasive.

(a) Regarding the rejection of claims 7-10 under 35 USC 112, first paragraph, the applicant argues that the specification supports the claimed limitation because, "as shown in Fig. 2, a power calculator 204 is provided that calculates the power of the signal output from the adder 203, wherein the output of power calculator 204 is input to the averaging unit 205" (see section III of the amendment). The applicant further argues that an inventor is not required to explain every detail since he is speaking to those skilled in the art. "What is conventional knowledge will read into the disclosure."

Examiner's response --- An inventor may not be required to explain every detail, but he is required to claim his invention according to the disclosure. The applicant is reminded the output signal of the adder 203 is a signal that is the combination of the weighted correlation signals. Therefore, the output of power calculator 204 is NOT the power of the correlations signals. Instead, it is the power of the COMBINATION of the

WEIGHTED correlation signals. Further, as shown in Fig. 2, the averaging unit 205 calculates the average of the signals output from the power calculator 204 and the selector 208. The averaging unit 205 does NOT calculate the average of the output signals from the power calculator 204. Therefore, a person of ordinary skill in the art will NOT recognize the power calculator 204 and the averaging unit 205 to be the means for averaging the power of the correlation signals as claimed.

(b) Regarding the rejection of claim 1 over Sawahashi reference, the applicant argues that the peak detector is not inherently present in the phase fluctuation estimator of Sawahashi (see section IV of the amendment).

Examiner's response --- The applicant merely indicates Sawahashi utilizes pilot symbols that are periodically inserted into transmitted frame to determine phase fluctuations and then concludes a peak detector is not necessarily present. The applicant neither explains why a peak detector is not necessarily present, nor provides a different possible means that does not include a peak detector to determine phase fluctuations. Nevertheless, the examiner has presented a secondary reference Ono to address such issue.

Allowable Subject Matter

7. Claims 2-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kaku (U.S. Patent No. 5,812,593) also teaches a peak detector to extract peak value correlation results to determine the phase of a reception path in a CDMA system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chieh M Fan whose telephone number is (703) 305-0198. The examiner can normally be reached on Monday-Friday 8:00AM-5:30PM, Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (703) 305-4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chieh M Fan
Primary Examiner
Art Unit 2634

cmf
March 18, 2004